**Get SMARTe: Decision Tools to Revitalize Communities**

**Authors:** Ann Vega[1], Nancy Porter[2], Neil Stiber[3]
[1]U.S. EPA/Office of Research and Development (ORD)/ National Risk Management Research Laboratory (NRMRL)
[2]U.S. EPA/Office of Solid Waste and Emergency Response (OSWER)/Office of Brownfields Cleanup and Redevelopment (OBCR)
[3]U.S. EPA/ORD/Office of Science Policy (OSP)

**Keywords:** brownfield, revitalization, community, mult-criteria decision analysis, land use

SMARTe (Sustainable Management Approaches and Revitalization Tools – electronic) is an open-source, Web-based, decision support system for developing and evaluating future reuse scenarios for potentially contaminated sites (e.g., brownfields). It contains resources and analysis tools to help overcome obstacles for all aspects of the revitalization process including land use planning, environmental risk management, economic viability, and social acceptance. Because the system is Web based, members of a community can work remotely and individually to express preferences about future land use and collaborate to write a revitalization plan. The integration of these tools makes SMARTe a holistic decision analysis system for revitalization that facilitates communication among stakeholders. SMARTe provides advice and insight intended to assist each community in identifying the optimal use for a site being revitalized.

Using a probabilistic decision analysis framework, SMARTe combines knowledge bases, geographic information systems (GIS), analysis tools (e.g., environmental modeling, risk assessment, statistics, economic modeling, and decision analysis), and documentation/presentation capabilities to provide a truly interactive analysis of revitalization problems. Probabilistic modeling requires specification of probability distributions for each parameter. These distributions capture both what is known about each parameter and its associated uncertainty. Decision-making is best supported by a full characterization of uncertainty so that the quality of the final decisions that are made can be measured, the need to collect additional information can be evaluated, and sensitivity analysis can be performed to identify the most important factors in the model. Decisions are nearly always made in the face of uncertainty, and this probabilistic framework allows the uncertainty to be specified, evaluated, and managed.

The US EPA's Office of Research and Development and Office of Brownfields Cleanup and Redevelopment are partnering to develop SMARTe. In this effort, they are collaborating with the Interstate Technology Regulatory Council (ITRC) and the German Federal Ministry of Education and Research (BMBF) as part of the US-German Bilateral Working Group. The framework for SMARTe is in place (www.smarte.org), but many analysis tools and other capabilities will not be available until the system is fully functional by the end of 2007.

**Point of Contact:**
Ann Vega
Revitalization Research Program Manager
U.S. EPA/ORD/NRMRL

26 W. Martin Luther King Drive, MS-489
Cincinnati, OH  45268
513-569-7635
vega.ann@epa.gov